

Employment generation for Women and Youth in a Manufacturing Driven Economic Complexity Framework: Ghana

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Summary

Economic growth in Ghana over the last decade has been comparatively strong. Minerals and crude oil production have largely been the driving force behind the 7.3% annual average growth over the period. Apart from the reliance on natural resources, the growth trajectory is such that the manufacturing sector that is supposed to be employment-intensive, lags behind capital-intensive mining and oil production.

Several policy efforts have been made to strongly push Ghana's industrialisation agenda, specifically to increase activities in the manufacturing sector. One such policy effort is the government's flagship programme "One-District One-Factory (1D1F)". It is imperative that investment being sought internally and externally to help set up factories across all administrative regions of Ghana, be anchored on products that quicken diversification and are not too far from existing capabilities. This also requires a focus on the employment potential of selected products for young people and women.

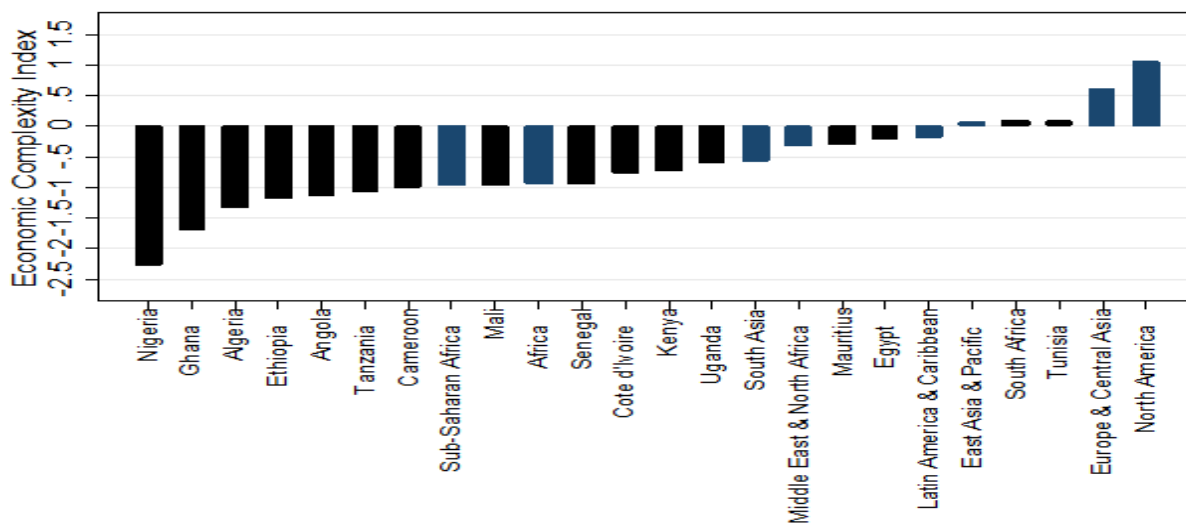
Ghana's Economic Complexity Level and Product Space

In order for economies in sub-Saharan Africa (SSA) to structurally transform, it is vital for countries to adopt or pursue industrial policies that are based upon products in which countries are already competitive in. It is in this light that the Economic Complexity framework (Hausmann et al., 2006) and product space analytics (Hidalgo et al., 2009; Hidalgo et al., 2007) can be applied to guide policy formulation. Economic complexity simply measures the accumulated level of knowledge that exists in an economy, evidenced in the production of varieties of products. In the language of economic complexity analysis, complex nations are in the position to produce more products – both simple and sophisticated, whilst less complex economies produce few goods and products that are very common (ubiquitous) to many others.

Similarly, within the framework, product complexity reflects the level of productive capabilities needed to make a product. Complex products require greater amounts of knowhow, whereas relatively less complex products have limited knowhow embedded in their production.

Ghana's economy is not particularly complex. As seen in Figure 1, it is below all regional averages represented here.

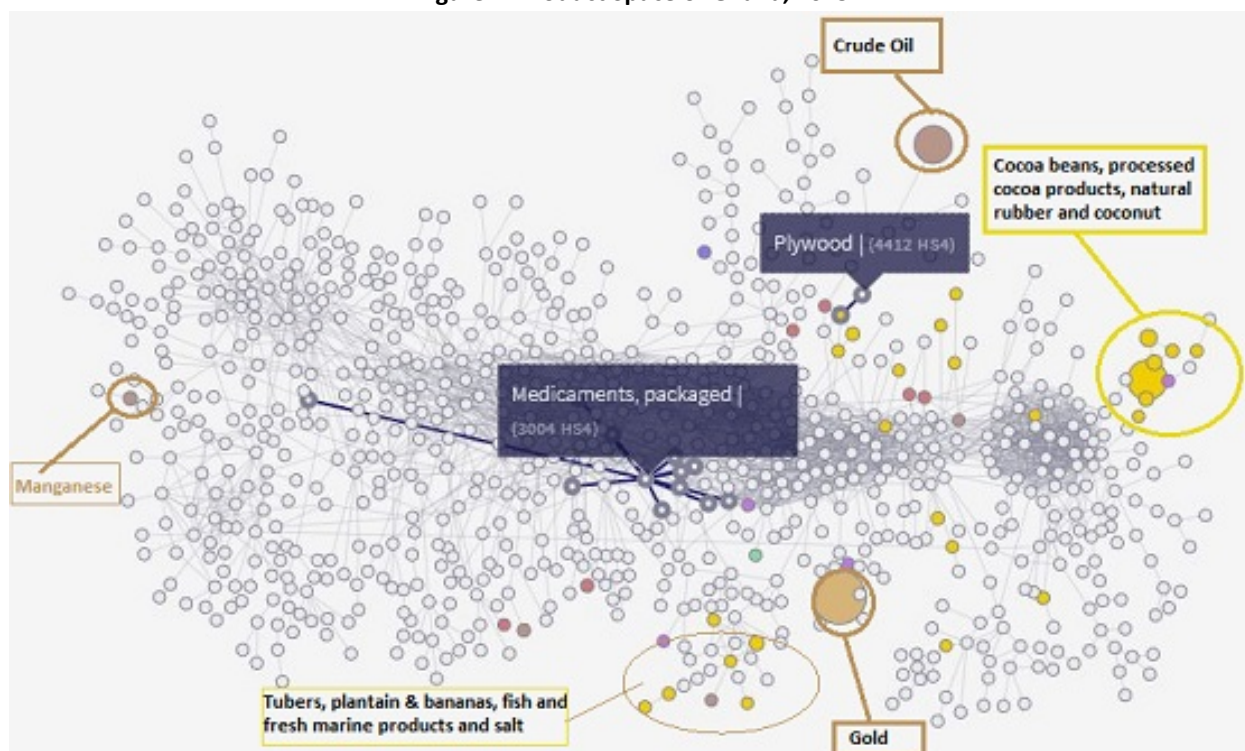
Figure 1: Global Economic Complexity Space, Ghana in the Index: 2015



The product space on the other hand, provides a visual representation of the productive structure of an economy, helping one ascertain how that country might diversify. In a product space map (see Figure 2), coloured nodes represent products that are significant components of a country's exports, whilst non-coloured dots constitute products that a country does not have comparative advantage in its export. A product space has two main parts: sections with loosely connected dots (or products) are all classified as peripheral, whilst denser areas with many nodes clustered in one place are called core regions. This is best illustrated by looking at Figure 2: note the location of packaged medicaments (an example of a product in a denser section) and then note where plywood appears in Ghana's product space. Packaged medicaments are connected to many more products than plywood, which is shown at the fringes, or periphery.

The proximity between these nodes or products can reflect how easily resources might be moved or deployed from one product to another. It is obvious that Ghana's product space is purely peripheral (comprising mainly of products at the fringes). This could explain why in spite of the positive growth over the last decade, the economy has not witnessed any significant structural transformation.

Figure 2: Product Space of Ghana, 2015



Source: Generated using the Atlas of Economic Complexity with location of products adapted (nodes are sized by country's trade)

Products for Diversification of Ghana's Economy and their Employment Potential

Complexity analytics not only aid in classifying countries according to the Economic Complexity Index (ECI) scale, but other metrics are included that help to identify specific products that are more complex, i.e. products that are not too far from Ghana's current capabilities and have potential for diversification. Using a dataset from the Atlas of Economic Complexity with indices that capture how far products are, and their diversification potential, a total of 201 products were identified. This was further trimmed to reveal the 20 'top' products. These top products were selected based on an index constructed to give equal representation to how complex products are, as well as their distance and diversification potential. Table 1 gives a percentage breakdown of these top products by product category. With the objective of targeting industries which disproportionately have greater employment potential for youth and women, the sixth round of the Ghana Living Standard Survey (GLSS VI) of 2013 was used to analyse the employment potential of these broad product categories. The results of which are shown in Table 1.

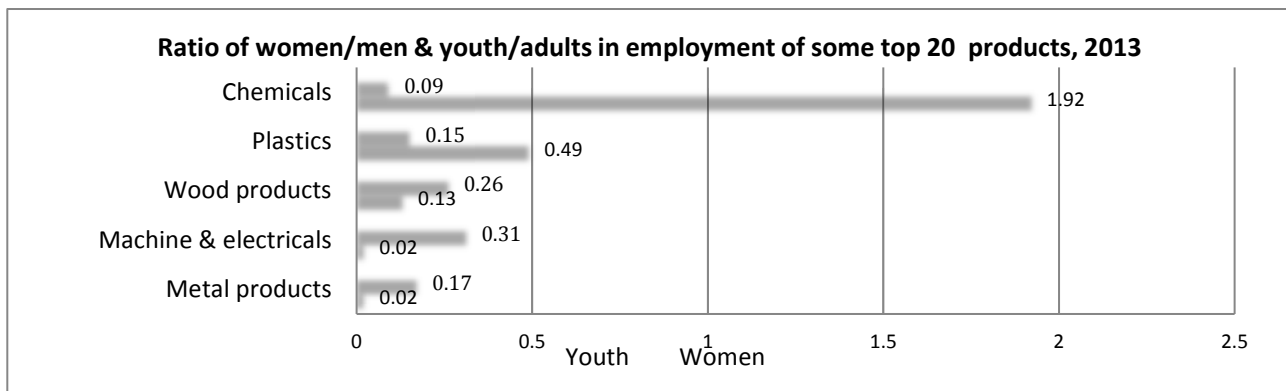
Table 1: Top 20 Products by Product categories (%)

| Product Category | % of Top 20 Products |
|----------------------------|----------------------|
| Chemical & allied products | 40 |
| Plastics | 25 |
| Machinery/Electrical | 15 |
| Wood and wood products | 10 |
| Metals | 10 |
| TOTAL | 100 |

Source: Computed using dataset from the Atlas of Economic Complexity website <http://atlas.cid.harvard.edu/>

Based on the female-male employment composition of 1.08 (and in manufacturing of 1.45), only chemicals – with a female-male employment composition ratio of 1.92 – has a strong employment generation potential. Relatedly, given an overall youth-adult employment composition ratio of 0.27 and 0.29 for manufacturing, only machine and electrical products stands out as the industry (or products) with high employment generation potential for young people. Wood products, with ratio of 0.26, suggest a moderate employment implication for youth, with chemicals, plastics and metal products generating employment mostly for adults.

Figure 3: Employment potential of Top Products for Young people and Women



Source: Computed from GLSS VI of 2013, Ghana Statistical Service

Key Findings from Firm Survey

Challenges in Building Ghana's complexity

Following the identification of the products, a firm survey was conducted to solicit views from firms and manufacturers who make the top products, or who have potential to do so – contingent on challenges and opportunities for expansion. Interestingly, contacted firms had multiple competencies, and a variety of complex products in their production mixes. In terms of the challenges faced, in addition to the high cost of production cited (high energy/utilities charges, interest rates, numerous taxes, etc.), manufacturers expressed their dismay at delays at destination ports for goods cleared by importers. This is the case of products exportable under Economic Community of West African States (ECOWAS) Trade Liberalisation Scheme – ETLIS. One manager recounted the following in relation to a recent export: *"...an export of a container load of tile adhesive by road to Nigeria [was] supposed to reach [the] importer in two days [but] took two weeks."*

Skills and Training / Increasing Employment of Young people and Women

Determining the skill gaps between what industries require to produce sophisticated products, and training offered to the youth, formed a key part of the investigation. This was further explored through interviews with human resource managers and industry practitioners. The low quality of skills exhibited by new labour market entrants (graduates) was a major concern expressed by managers. One manufacturer said bluntly that, *"newly-engaged technicians know next to nothing"*. An industrialist noted that the limited number of industry-specific training institutions in Ghana was critical. They also emphasised that young workers' inability to handle work on factory floors initially stems from the lack of exposure to such work environments while in school. Also stressed was the lack of initiative on the part of young workers, as in many instances no ingenuity was brought to bear in solving work-based problems. In the case of women workers, inflexible working hours and frequent leave requests were what hinders these firms from engaging more women.

Key Policy Recommendations

For Ghana to structurally transform – and to do so at a fast pace – efforts have to be made to move the economy from the building of know how around simple products, to more sophisticated ones. This shift should encompass inclusiveness, generating benefit for young people and women. Based on the findings of this research, areas which require intervention to improve Ghana's economic complexity ranking, and to disproportionately provide employment for more women and young people, include:

Improving Ghana's Complexity

- Besides improving the *macroeconomic environment* firms operate in, *trade facilitation programmes in non-tariff forms* (better custom administration and improved cooperation between export agencies across countries) could help Ghana increase its complexity.
- Fostering support for *investments in Research and Development (R&D)* made by firms, and strong collaborations between firms and educational – along with training – institutions and research centres.

Increasing Employment for Young People and Women

- Improved Science, Technology, Engineering and Mathematics (STEM) education offered for young people and women can build knowhow.
- Inculcation of soft skills [social skills, teamwork, flexibility, problem-solving, communication and related competencies] and work-based learning (WBL) schemes into schools' curricula could augment hard skills and personality traits of trainees and enhance their employability.
- Specific training and flexible working hours for women workers. There is the need for programmes that make it possible for the sharing of experience and lessons learnt by industries with greater numbers of women.

References and useful resources

- Hausmann, R. & Klinger, B. 2006. Structural Transformation and Patterns of Comparative Advantage in the Product Space. Working Paper Series RWP06-041, Harvard University, John F. Kennedy School of Government. Accessed 12th November 2016: <https://research.hks.harvard.edu/publications/getFile.aspx?id=465>
- Hidalgo, C.A., Hausmann, R. & Dasgupta, P.S. 2009. The building blocks of economic complexity. *Proceedings of the National Academy of Sciences of the United States of America*, 106(26):10570–10575. Available at: <http://www.jstor.org/stable/40483593>.
- Hidalgo, C.A., Klinger, B., Barabási, A.L. & Hausmann, R. 2007. The product space conditions the development of nations. *Science*, 317(5837):482-487.

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